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(71) Applicant: S.I.V. S.p.A.  
10040 Volvera (Torino) (IT)

(72) Inventors:  
• La Rosa, Giacomo  
90144 Palermo (PA) (IT)  
• Cavaglia', Renato  
10040 Volvera (TO) (IT)

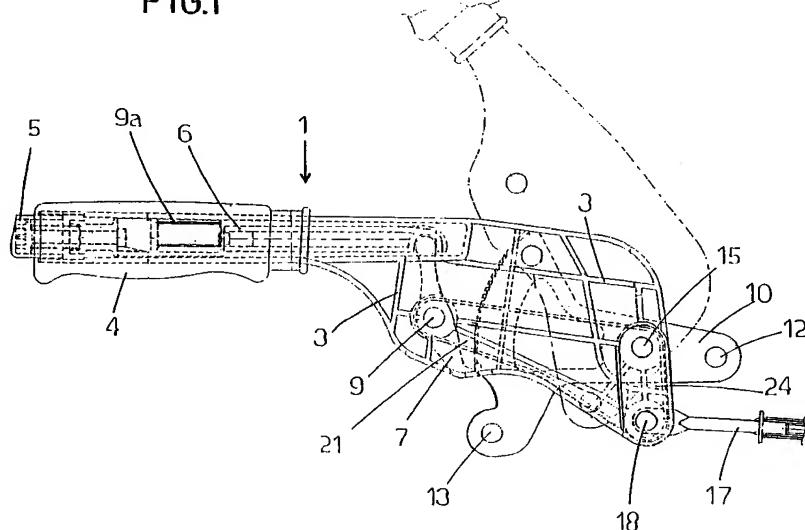
(74) Representative:  
Di Francesco, Gianni et al  
Ing. Barzanò & Zanardo Milano S.p.A.  
Corso Vittorio Emanuele II, 61  
10128 Torino (IT)

### (54) Safety device for a parking hand brake with a plastic lever

(57) This invention relates to a safety device for a parking brake of a motor vehicle, said brake being equipped with one plastic lever (1), resting on a fulcrum on a toothed sector (10) and movable between a position of rest and a working position; means to control the position of the lever in relationship to said toothed sector, consisting of one pawl (7) in the shape of an equaliser, resting on a fulcrum on said lever (1); one pivot (18) for connection to said lever for a rod (17) transmitting its

movement to the braking device of the motor vehicle; means for the connection of the toothed sector to the flatcar of the motor vehicle; said device comprising one metal plate (21) in which are inserted, in adequate holes: the pivot (15) to make the lever (1) rest on a fulcrum on the toothed sector (10); the pivot (9) to make the pawl (7) rest on a fulcrum on the lever (1), and the pivot to connect the rod (17) to said lever (1).

FIG.1



**Description**

[0001] The present invention relates to a safety device for a parking hand brake for a motor vehicle, equipped with a plastic lever.

[0002] Plastic levers for parking hand brakes for motor vehicles are already known. Their resistance to stress is achieved by way of reinforcement ribbing. The advantages of these levers, as compared with the conventional metal ones, consist in that they are light, silent and cost less.

[0003] The most important disadvantage of this kind of levers relates to the fact that, in case of fire, it is not possible to guarantee that the parking brake will be kept braked, due of the loss of the function of the lever and the following loss of the fixing point for the transmission cable to the brake mechanism arranged on the wheels.

[0004] It is the object of the present invention to avoid such inconvenience.

[0005] Said object is achieved by means of a safety device for a parking hand brake as claimed in the first claim.

[0006] Additional advantages and characteristics will become evident from the following description made with reference to the attached drawings which illustrate the invention by way of non-limiting example and in which:

- Figure 1 is a view of the components of the brake assembled before being mounted on the motor vehicle;
- Figure 2 is a plan view of one of the components of the brake in Figure 1, and
- Figure 3 is a plan view of a second component of the brake in Figure 1.

[0007] With reference to the figures, reference number 1 indicates a parking hand brake with a plastic lever presenting several reinforcement ribs 3. Said lever is equipped with a grip 4 (which could also be integral part of the lever) and of a button 5, which by a transmission rod 6, moves a pawl 7 in the shape of an equaliser resting on a fulcrum on a pivot 9. The button 5 and the transmission rod 6 may be made also as a single piece.

[0008] The position of the pawl 7 is controlled by means of a spring 9a which, by working on the transmission rod 6, push it against a toothed sector 10. The toothed sector 10 is fixed on the tunnel of the motor vehicle (not shown) at the points 12 and 13 by conventional means, e.g. bolts (not shown). The lever 1 is resting on a fulcrum on the upper part of the toothed sector 10, by means of a pivot 15. The lever and the pivot can rotate freely on the sector in order to reach the higher position indicated by section lining, that is the working position, in which it acts on the transmission rod 17. This rod is connected to the lever itself, on the end opposite to the end of the grip 4, by means of a pivot 18. When the lever is in the working position the transmis-

sion rod is pulled in the direction indicated by arrow F and transmits the movement of the lever 1 to the actuating mechanism of the parking brake which blocks the wheel of the motor vehicle.

[0009] According to the invention, in order to prevent the brake from being released, in case the function of the lever 1 is lost, because of fire or of any other reasons, so that the motor vehicle could move without control, the pivot 9 serving as fulcrum for the pawn 7, the pivot 15 which is fulcrum to the lever 1 and the pivot 18 to which rod 17 is connected, are connected by means of a metal plate 21 basically triangular in shape (figure 2) equipped with holes 22 for the passage of said pivots. Moreover, said plate is equipped with a reinforcement indentation 23. However, the shape of the plate is not binding and could be modified without departing from the scope of the invention.

[0010] In order to make the complex more solid, a metal platelet 24 (figure 3), equipped with passage holes, is located, between the pivots 15 and 18, on the other face of the lever 1 with respect to the one were the metal plate 21 is. All the pivots employed are closed by means of riveting, but different methods can be employed and even the shape of the platelet 24 could be specular to the shape of the plate 21, without departing from the scope of the present invention.

[0011] Furthermore the materials used to make the plate 21 and the platelet 24, could be different from metal (e.g. kevlar) yet presenting equivalent functional characteristics in case of variations in the temperature.

[0012] The teeth of the toothed sector 10 and the pawl 7, will be profiled so that they will become disengaged only as a consequence of the action of the transmission rod 6.

[0013] Thus even if the lever 1 is totally melted and the rod 6 falls, the coupling of the tooth 7 and the toothed sector 10 remains stable and the traction on the transmission cable 17 is kept.

**Claims**

1. Safety device for a parking brake of a motor vehicle, said brake being equipped with:

- one plastic lever (1), resting on a fulcrum on a toothed sector (10) and movable between a position of rest and a working position;
- means to control the position of the lever in relationship to said toothed sector, consisting of one pawl (7) in the shape of an equaliser, resting on a fulcrum on said lever (1);
- one pivot (18) for connection to said lever for a rod (17) transmitting its movement to the braking device of the motor vehicle;
- means for the connection of the toothed sector to the flatcar of the motor vehicle; characterised in that it comprises one metal plate (21) in which are inserted, in adequate

holes: the pivot (15) to make the lever (1) rest on a fulcrum on the toothed sector (10); the pivot (9) to make the pawl (7) rest on a fulcrum on the lever (1), and the pivot to connect the rod (17) to said lever (1).

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2. Device as claimed in claim 1 characterised in that the pivot (15) to make the lever (1) rest on a fulcrum on the toothed sector (10) and the pivot (18) to connect the rod (17) to said lever (1) are inserted into holes made into a single metal platelet (24).  
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3. Device as claimed in claim 1 characterised in that the pivot (15) to make the lever (1) rest on a fulcrum on the toothed sector (10), the pivot (18) to connect the rod (17) to said lever (1) and the pivot (9) to make the pawl (7) rest on a fulcrum on the same said lever (1), are inserted in holes made in a metal platelet (24) the shape of which is specular to that of the metal plate (21).  
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4. Device as claimed in claim 1 characterised in that the metal plate (21) is equipped with a reinforcement indentation (22).  
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FIG.1

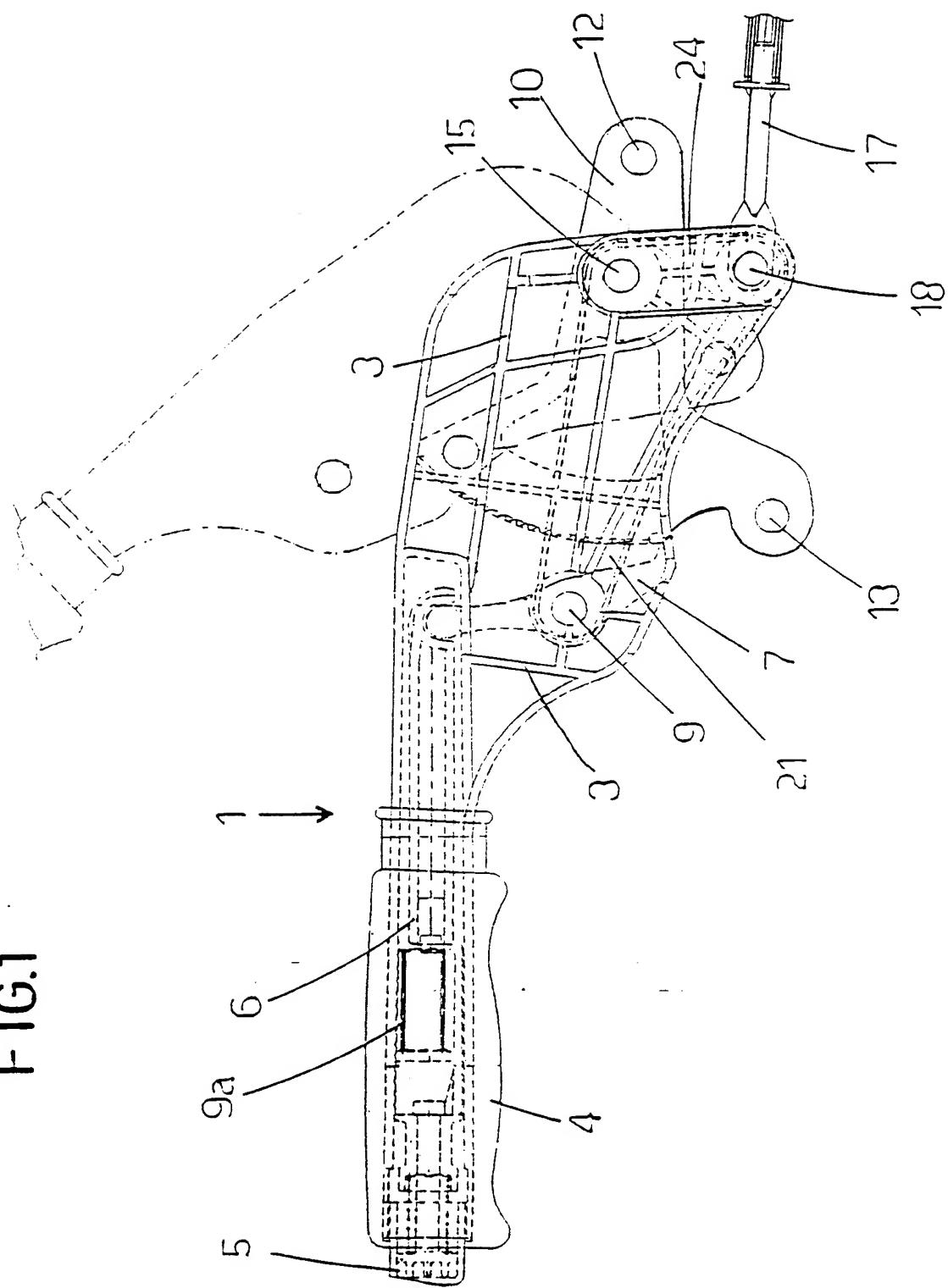


FIG.3

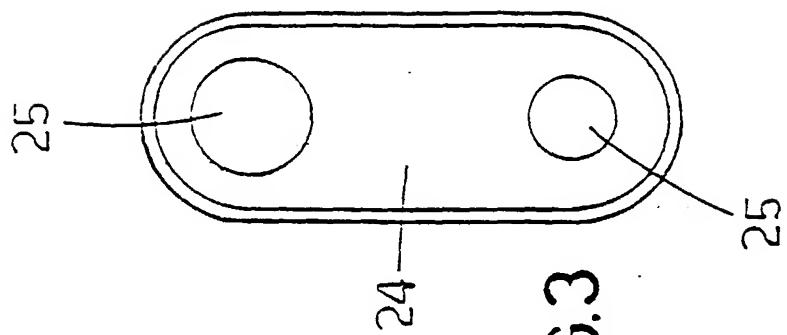
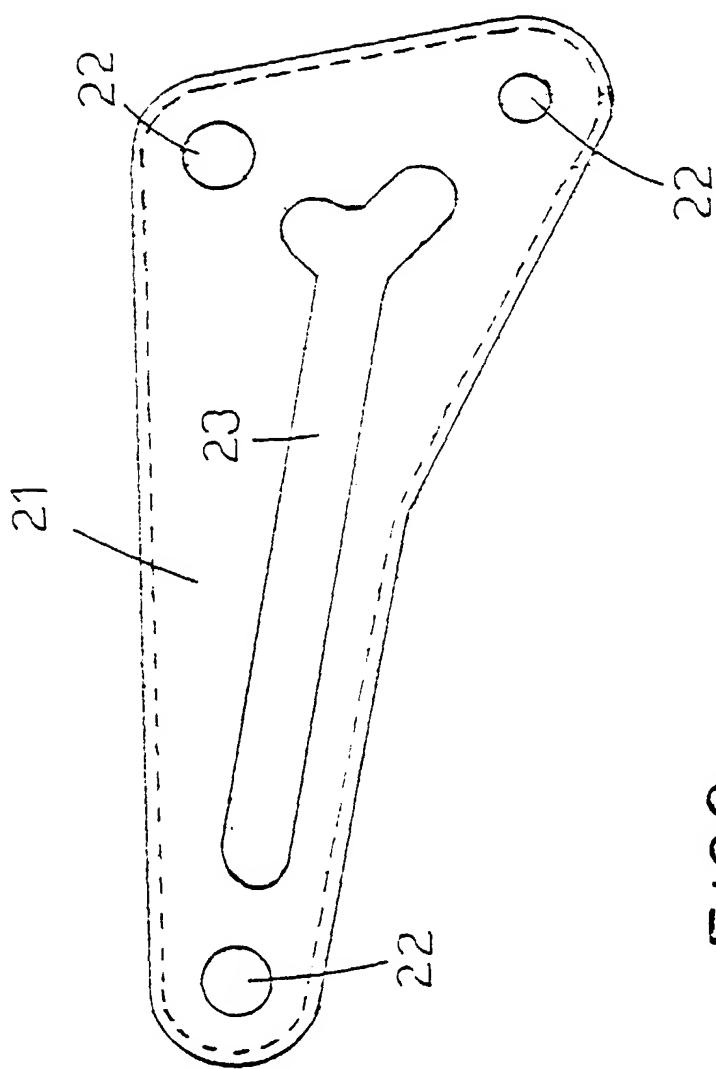


FIG.2





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## EUROPEAN SEARCH REPORT

Application Number  
EP 98 12 0473

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	EP 0 499 494 A (ROCKWELL AUTOMOTIVE BODY SYST) 19 August 1992 (1992-08-19) * column 3, line 38 - column 4, line 47; figures 1-3 *	1	B60T7/10 G05G1/04
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B60T G05G
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of completion of the search	Examiner	
BERLIN	9 September 1999	Blurton, M	
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 98 12 0473

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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